

FUNCTIONS & GRAPHS

Parent Polynomial Function Behavior



EX #1: $y = c$

 even, y-axis constant, no zeros

EX #2: $y = x$

 odd, origin increases, 1 real zero
 $\lim_{x \rightarrow -\infty} y = -\infty$
 $\lim_{x \rightarrow \infty} y = \infty$

EX #3: $y = x^2$

 even, y-axis
 1 real zero
 $\lim_{x \rightarrow -\infty} y = +\infty$
 $\lim_{x \rightarrow \infty} y = +\infty$

EX #4: $y = x^3$

 odd, origin
 1 real zero
 $\lim_{x \rightarrow -\infty} y = -\infty$
 $\lim_{x \rightarrow \infty} y = \infty$

EX #5: $y = x^4$

 even, y-axis
 1 real zero
 $\lim_{x \rightarrow -\infty} y = +\infty$
 $\lim_{x \rightarrow \infty} y = +\infty$

EX #6: $y = x^4$

 even, y-axis
 1 real zero
 $\lim_{x \rightarrow -\infty} y = +\infty$
 $\lim_{x \rightarrow \infty} y = +\infty$

EX #7: $y = x^4 + \dots$

 even, neither
 4 real zeros

EX #8: $y = x^5$

 odd, origin
 1 real zero
 $\lim_{x \rightarrow -\infty} y = -\infty$
 $\lim_{x \rightarrow \infty} y = \infty$

EX #9: $y = x^5 + \dots$

 odd, neither
 5 real zeros

EX #10: Can you tell? odd
 $y = x^3 - x$
 $0 = x(x^2 - 1)$
 $x = 0, \pm 1$

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Parent Polynomial Function Behavior

This is a FREE lesson in the unit on *Functions and Graphs* for students enrolled in PreCalculus. The lesson includes a fully-editable Smart Notebook lesson and a four-page Folded Book style Foldable[®] inspired by the work of Dinah Zike.

You might be interested in my [Activities and Assessments Bundle](#) for Functions and Graphs.

The SMART Board lesson can be used in many ways. Teachers can display the presentation using the following:

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2. Airliner Wireless Slate[®]
3. [SMART Notebook for IPAD App](#)
4. Through the SMART Notebook Express[®]
<http://express.smarttech.com/#>
5. Promethean Boards[®]
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